Giving the Warfighter the Tools for Counterterrorism: Statistically Speaking

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The long-range contribution of statistics depends not so much upon getting a lot of highly trained statisticians into industry as it does in creating a statistically minded generation of physicists, chemists, engineers, and others who will in any way have a hand in developing and directing the production processes of tomorrow.
- W.A.Shewhart & W.E.Deming

Major Themes

- Flexibility
- Capability
- Reliability
- Privacy

A knowledge of statistics is like a knowledge of foreign languages or of algebra; it may prove of use at any time under any circumstances.

- A.L. Bowley

Acquisition Flexibility

- Rise in Efficiency Among Producers
- The Pace of Technology
- The Pace of Threats

Flexibility Examples

- Joint Rapid Acquisition Cell
  - Meet Immediate Warfighter Needs
  - Diverse Experience Base
  - Leveraging Technology

Flexibility Examples

- Quick Reaction Special Projects
  - Defense Acquisition Challenge Program
  - Technology Transition Initiative
  - Combating Terrorism Technology Task Force

Thermobaric Weapon

Deployed & Employed in Operation Enduring Freedom (OEF) in Afghanistan

Chemistry to Fielded System – 90 Days

Providing Capability

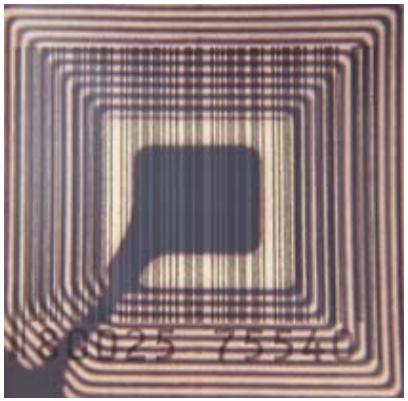
- Impacted by Trends in U.S. Education
- Lacking Statistical Knowledge
  - Applying principles of optimal experimental design to non-standard situations
  - Methods for combining information from developmental test and tests of other systems with the results of operational test
  - State-of-the-art validation of simulation models for augmenting operational testing
- Testing Critical to Acquisitions

Increasing Access to Statistical Expertise

Logistics Reliability

- Unique Identification (UID)
- Remote Frequency Identification (RFID)
- Statistical Volume of DoD Inventory

UID



RFID

Privacy Issues

- Technology & Privacy Advisory Committee
- Implementation Emphasis on DoD

Privacy Issues Continued

- Must Not Sacrifice Liberty for Security
- Data Mining
- Concerns
  - False Positives
  - Mission Creep

“they that can give up essential liberty to purchase a little temporary safety deserve neither liberty nor safety” - Benjamin Franklin

Summary

- Counterterrorism Mandates
  - Flexibility
  - Capability
  - Reliability
  - Privacy

The long-range contribution of statistics depends … upon … creating a statistically minded generation of physicists, chemists, engineers, and others who will in any way have a hand in developing and directing the production processes of tomorrow.

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BACKUP

The Challenge: Pace of Technology

- "Moore's Law" → Computing doubles every 18 months
- "Fiber Law" → Communication capacity doubles every 9 months
- "Disk Law" → Storage doubles every 12 months

Defense Acquisition Pace *(circa 2003)*

F-22 Milestone I: Oct 86 IOC: Dec 05*

Comanche Milestone I: Jun 89 IOC: Sep 09

* Computers at IOC are 512 X faster, hold 65,000 X bits of information than they did at MS I

Technology growth is non-linear…
Acquisition path has been linear

Dragon Eye (DE)-ATR
(Chem-Bio-Video Advanced Tactical Recce)

Description:

- Visual Battle Damage Assessment (BDA)
- Real time chemical agent detection and data transmission to ground station
- Collection of biological agents
- Ground-based bioagent analysis 30 - 45 min

Retrofitted New Sensors: ~ 1 month

Deployed to Support Operational Iraqi Freedom Today

The UID Lifecycle

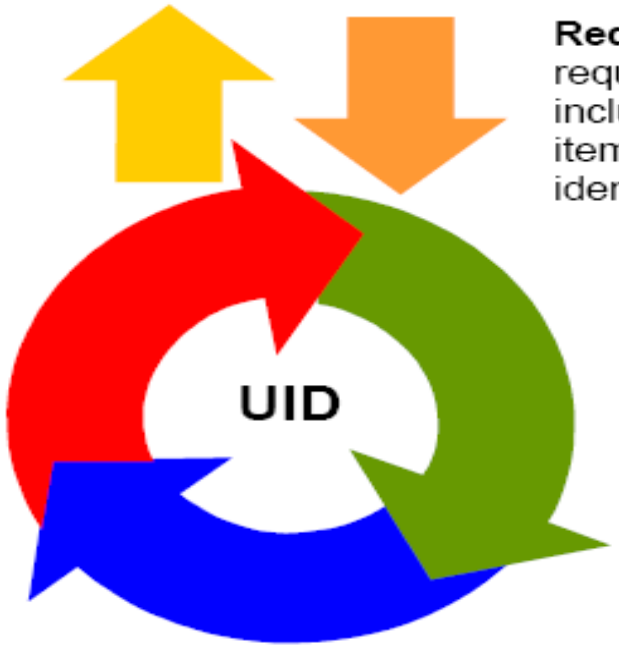
Require – DoD contracts reflect the requirement for part marks to include UID data elements for all items which require unique identification

Create/Generate – Industry suppliers/manufacturers throughout supply chain assign and apply UID data elements and ensure the uniqueness of the combined component data

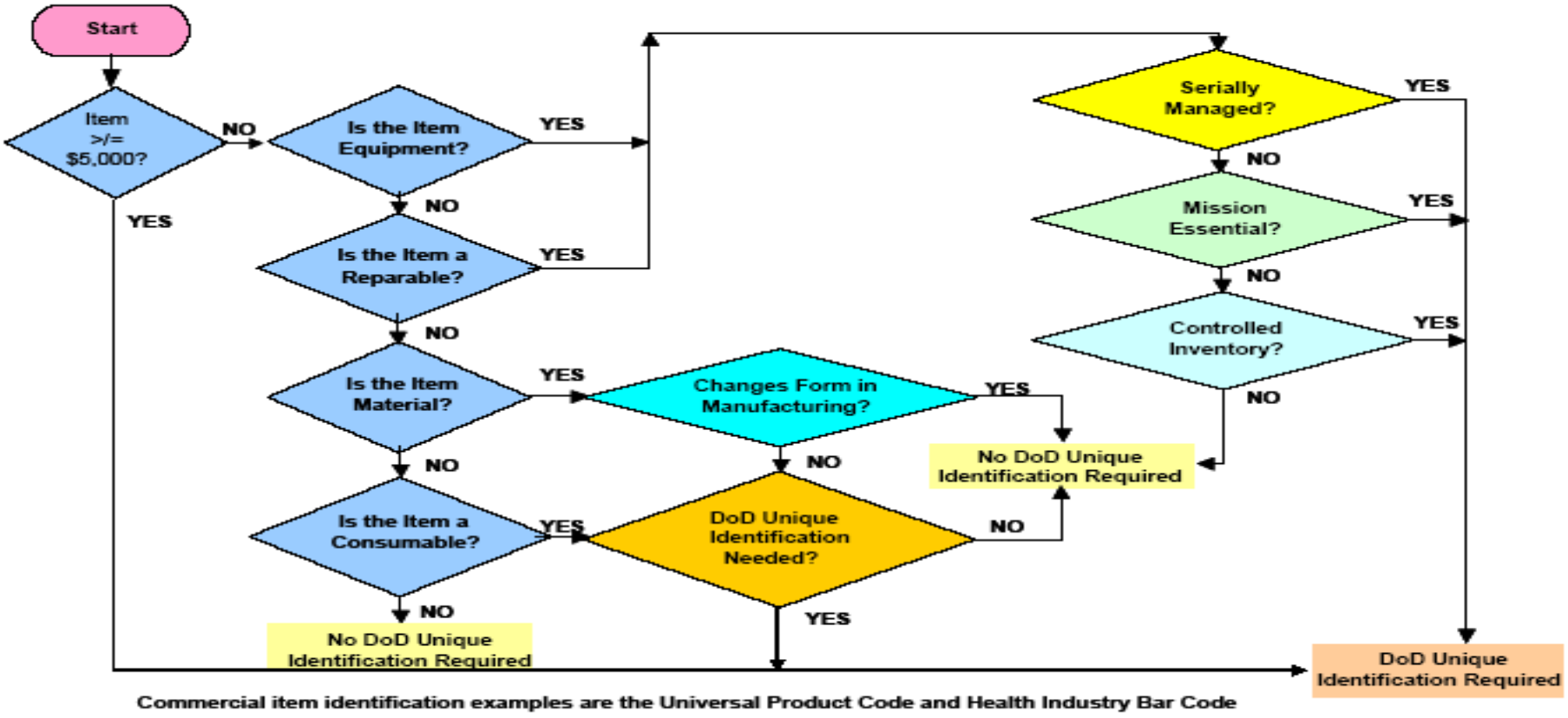
Capture – DoD establishes the "birth" record of the UID by capturing the component data elements to create the UID in the AIT/AIS.

Use – Functional stakeholders use UID as a primary or alternate key in the AIS to access or update item information based on its UID

Dispose – DoD/GSA records the "termination" of the UID at time of item disposal



Decision Tree to UID Items Under $5000



Commercial item identification examples are the Universal Product Code and Health Industry Bar Code

Phase I (Sep 2001 – Feb 2002)

Key Near-Term Technologies

Thermobaric Weapon

- Chemistry to Fielded System – 90 Days
- Teaming:
  - Defense Threat Reduction Agency
  - Air Force Research Laboratory
  - Air Armament Center
  - Naval Surface Warfare Center
  - Air Combat Command
  - DoE / Lawrence Livermore National Lab

Deployed & Employed in Operation Enduring Freedom (OEF)

Conventional Air Launched Cruise Missile (CALCM) Penetrator

Deployed / Employed in Operation Iraqi Freedom (OIF)

Nuclear Quadrupole Resonance